Socio-economic importance and management of village chicken production in rift valley of Oromia, Ethiopia

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Abstract

Village chickens are found in different agro-ecologies of Ethiopia but clear information is lacking regarding their socio-economic importance and production management in rift valley of Oromia, Ethiopia. Therefore, in this study a total of 88 households rearing village chickens in rift valley of Oromia, were surveyed to get base line information on characteristics of households involved in village chicken production and utilization, feeding, reproductive and housing management of village chicken.

The majority (92.4%) of the surveyed households said that village chicken production is accomplished by women and children. It was also shown that village chicken keepers in the study areas used chickens and their by products for home expenditure (44%), home consumption (24%), ceremony and/or sacrifice (22%) and as deposit (10%). Fifty percent of the respondents said the age at first egg is 24 to 28 weeks. The overall average flock size was 13 chickens per household (i.e., 12 local chickens and one exotic chicken per household). Even though, no village chicken producers formulate poultry feed in all the study areas 60% of them cultivate by themselves locally where in 90% of the cases maize, wheat, sorghum and household waste products are used as the main source of village chicken feed. Chickens were kept in cartoons and baskets made of bamboo or a round stick placed in the main house (58%) and perch (26.6%). In the present study, 81 % of the households cleaned chickens houses once per day, and 14 % twice per day. The survey also further showed that village chicken keepers in the study areas usually stimulated broody hens to lay eggs by changing their houses (30%), hanging their leg up down to fixed objects (21%) and providing additional feed (13%).

Since village chickens play an important role in improving the livelihood of the families, there is a need to design and implement a research programme in order to improve their productivity in rift valley of Oromia, Ethiopia.

Keywords: broody, rift valley, rural poultry, utilization

Introduction

Poultry production systems in tropical countries are mainly based on the scavenging indigenous chickens found in virtually all villages and households in the rural areas. Approximately 80% of the chicken populations in Africa are reared in these systems

(Guéye 1998). Village chickens are important in low-income food deficit countries. They represent an appropriate system for supplying the fast growing human population with high quality protein and provide additional income to resource-poor farmers, especially women. Although they require low levels of inputs, village chickens contribute significantly to food security, poverty alleviation and ecologically sound management of natural resources (Guéye 2003).

In developing countries village poultry keeping is regarded as an important livelihood opportunity for the poor households: economically as starter capital, as a means to recover from disasters, as an accessible protein source and for income and exchange purposes, and socio-culturally for mystical functions, hospitality and exchange of gifts to strengthen social relationships (Aklilu 2007). Village chickens were regarded as a walking bank by many families and were often sold to meet emergency cash needs (Moreki et al 2001). To emphasize the short term benefits they get from poultry Ethiopian farmers have a local saying to describe this: *"an egg today is worth more than a dairy cow next year''*. Similarly, farmers express the fast turnover in poultry as, "*chickens conceive in the morning and deliver in the afternoon",* referring to the higher reproductive rate of poultry compared to large stock (Aklilu 2007).

Although there are studies conducted, in general, on characterization of poultry production system in some places of the country by some researchers (Tadelle 1996; Alemu and Tadelle 1997; Aberra 2000; Solomon 2004), clear information is lacking regarding the socio-economic importance, production and management of village chicken in rift valley of Oromia, Ethiopia. Therefore, the objectives of the current study were to collect base line information on characteristics of households involved in village chicken production and utilization, feeds and feeding practices, reproductive and housing management ofvillage chicken in rift valley of Oromia, Ethiopia.

Materials and methods

Description of the study area

The study was conducted in five randomly selected districts of west Arsi and east Shoa zones (Siraro, Shalla, Shashamane, Adami-Tullu Jido kombolcha and Boset) in mid rift valley of Ethiopia. The study areas are located at 709'N to 8045'N and 38032'E to 39017'E encompassing about 40-60 km width and more than 100 km length bordered by high land plateaus characterized by semi-arid type of climate with an erratic, unreliable and low rain fall, averaging between 500 and 900 mm per annum. The rainfall is bimodal with the long rains from June to September and short rains from February to April (ATARC 1998).

Study design

A total of 88 households rearing village chickens were randomly selected and interviewed using structured questionnaire. Accordingly, data on social characteristics (household ownership in village chicken) of households involved in village chicken production, feeds and feeding practices, housing, management of chicken and eggs, utilization of chicken and eggs, opportunities and challenges of village chicken production in mid rift valley of Oromia were collected.

Data Analysis

Data were analyzed using Statistical Package for Social Sciences Inc. (SPSS 2001). Descriptive statistics such as mean, range, frequency and percentage were used to summarise and present the results.

Results and discussion

Characteristics of households involved in village chicken production

Village chicken production is widely practiced in all study districts in rift valley of Oromia as a source of income for immediate household expenses. Village chicken keepers in the study area use chickens and chicken by products as a source of income/cash or for home expenditure (44%), home consumption (24%), ceremony and/or sacrifice (22%) and as deposit (10%). On the other hand, eggs from village chickens in the study area are used for hatching for replacement stock, sale for cash income and home consumption. Table 1 shows that 92.4% of village chickens were owned by children and women and they played a role in providing supplementary feeding and watering, 60% and 15%, respectively. This implies that housing, feeding and general management of village chickens are the responsibility of women and children while men are responsible for other off-farm activities.

Table 1. Socio-economic characteristics and importance of village chicken production

Variables	East Shoa Zone		West Arsi Zone			Overall
	Districts					
	Adami Tulu	Boset	Shashamane	Siraro	Shalla	
Sex of the respondent, %						
Male	50	15	17	14	6	56
Female	50	17	10	1	0	32
Average age of the respondent	38	36	31	34	31	34
Average flock size/household (HH)						
Local	17.2	11.9	10.4	14.1	12.5	12
Exotic	4.13	0.81	0.04	0.13	0.5	0.76

Ownership of chickens in HH, %						
Wife/women	43.8	34	20.5	27	8.3	26.7
Husband	0	24.5	13.5	0	0	7.6
Children	56.2	41.5	66	73	91.7	65.7
Importance of chicken and chicken product, %						
For home expenditure	35	45.5	48	39	34.5	44
For home consumption	20	25.5	23	29	40.5	24
For ceremony /or sacrifice	20	21	20	22.5	15.5	22
For deposit	25	8	9	9.5	9.5	10

This is in agreement with the Mcainsh et al (2004) in Zimbabwe who reported that children and women were responsible for chicken rearing. Rural women and children are traditionally believed to play an important role (John 1995) as they are generally in charge of most chicken husbandry practices, since small-scale animal production does not require heavy manual labor (Riise et al 2004). According to Guéye (1998), approximately 80 % of the chicken flocks in a number of African countries were owned and largely controlled by women.

The number of chickens per household of most Ethiopian rural communities is small and comprise birds from all age groups with an average of 7-10 mature birds, consisting of 2-4 adult hens, a male bird (cock) and a number of growers of various ages (Tadelle 1996).

In this study the overall average flock size was 13 chickens per house hold (12 local chickens and only one exotic chicken. These results are in agreement with Guéye (1997) who reported that the flock sizes generally ranged from 5 - 20 fowls per African village household. An average flock size of 16 birds was also reported in the central parts of Ethiopia (Tadelle et al 2003). In southern part of Ethiopia, Mekonnen (2007) also reported the overall mean flock size to be 9.22 with a range of 3 to 26 birds per household.

Feeds and feeding practices of village chicken

In most part of Ethiopia, village chickens represent a significant component of the rural household livelihood as a source of cash income and nutrition. Birds scavenge in the vicinity of the homestead during daytime where they may be given cereal grains, cereal bran, broken grains and other house waste products as supplementary feed (Aklilu 2007).

In the present study, 98% of households were engaged in village chicken production and provided partial supplementary feeding to their chickens of various ages. Only

two percent of the households did not provide supplementary feeding to their chickens to their chickens, indicating that chickens scavenged most of the time. The chicken keepers do partial supplementation mostly once per day (64%) and feedstuffs such as maize, wheat, sorghum and household waste products are used as the main sources of village chicken feed. This result is consistent with Halima (2007) who reported that 99.28% of farmers in north western part of Ethiopia provide supplementary feeding to their chickens of different age groups together mostly once per day with maize, barley, wheat, finger millet and household waste products.

Even though no village chicken producers formulate feed in all the study areas, 60% of them cultivate crops by themselves. This result is in agreement with Mapiye and Sibanda (2005) who reported that 95.5 % of the feed for village chickens was produced locally.

From all the study areas it was observed that village chicken producers provided water for village chickens at different times of the day: ad-libitum (47%), once (14%), twice (18%), three times (16%) and four times a day (5%) from tap water (66%), river water (15%), borehole (6%) and other (13%) sources. These results are in agreement with Mekonnen (2007) in southern Ethiopia who reported 65% and 73.8% for provision of supplementary feed and provision of water, respectively.

Housing management of village chicken

Housing is essential to chickens as it protects them against predators, theft, inclement weather (rain, sun, cold wind, dropping night temperatures) and to provide shelter for egg laying and broody hens. The present study showed that only 14% of the respondents have separate sheds for chickens. The common housing facilities for chickens in the surveyed area were cartoons and baskets made of bamboo or a round stick placed in the main house (58%) and perch (26.6%) (Table 2).

Table 2. Feeding and housing practices of village chickens

Variables	East Shoa Zone		West Arsi Zone			Over all
	Districts					
	Adami Tulu	Boset	Shashamane	Siraro	Shalla	
Feeding system practiced, %						
Partial supplementation	100	100	88.9	100	100	98
Scavenging	0	0	11.1	0	0	2
Overnight shelter, %						
Kitchen	0	7	0	0	0	1.4
Main house	0	29	89	73	100	58
Perch	100	22	3.7	6.7	0	26
Separate poultry house	0	42	7.4	20	0	14

Frequency of cleaning shelter, %						
Once per day	100	43.8	100	80	-	81
Every two days	0	37.4	0	20	-	14
Every 3 to 6 days	0	18.8	0	0	-	5
Identify spoiled eggs, %	60	66	56	74	48	61
Means of identifying spoiled eggs, %						
Putting in water	36	46	21	17.4	22.2	28
Sun candling	36	30	39.5	43.6	44.4	39
Shaking	28	24	39.5	39	33.3	33
Average eggs hatched per clutch	4	4	6	6	5	5
Season of incubation, %						
Wet season	0	0	7.4	13.3	0	4
Dry season	12.5	62.5	51.9	33.3	50	42
Any time	87.5	37.5	40.7	53.3	50	54

These results are consistent with Fisseha (2009) who reported that only 22.1% of farmers provide separate overnight houses for village chickens. Halima (2007) reported that almost all farmers provided night shelter for their chickens either in part of the kitchen (1.36 %) or in the main house (39.07 %), in hand-woven baskets (7.29 %), in bamboo cages (1.51 %) or in separate sheds purpose-made for chickens (50.77 %).

In the current study, the role of men in poultry production was in the construction of poultry shelters (57.5%). This is in agreement with Mapiye and Sibanda (2005) from Zimbabwe who reported that men were dominant in shelter constructions (60%) and treatment of chickens (40%). Mekonnen (2007) also reported that chicken house construction was the responsibility of men (53.1%) and male youth (9.4%) while women take the lion share in accomplishing other perspectives of poultry management activities including cleaned house (74.4 %), provided supplementary feeding (65%) and water (73.8%).

It was indicated by Halima (2007) that farmers confine chickens only during the night and that 74.02 % of the households clean chickens' house once per day while 11.66% twice per day. In the present study, 81% of the households cleaned chicken houses once per day and 14 % twice per day.

Production and reproductive management of village chickens

Halima (2007) in the North West part of Ethiopia reported that 31.92 % of the pullets and 20.07 % of cocks reach maturity at 28 to 32 weeks. Similar studies in Tanzania (Katule 1992) reported sexual maturity of 28 weeks, 24 weeks in Mali (Kassambara

1989) and Nigeria (Sonaiya and Olori 1989), 32 weeks in Sudan (Wilson 1979), 28 to 36 weeks in Benin (Assan 1990) and 25 weeks in Senegal (Sall 1990). These results show that the age at first egg ranges from 24 to 28 weeks. In this study, the number of eggs laid per clutch ranged from 10 to 18. Farmers in the study areas usually stimulated broody hens to lay eggs by changing their house (30%), hanging their leg up down to fixed objects (21%) and providing additional feed (13%). According to these results, farmers select productive hen based on their body size (68%), finger accommodation between the pelvic bones (12%) and pedigree (20%) (Table 3).

Table 3. Production and reproductive management of village chicken

Variables	East Shoa Zone		West Arsi Zone			Overall
	Districts					
	Adami Tulu	Boset	Shashamane	Siraro	Shalla	
Select productive hen, %						
Finger accommodation	0	17.5	0	12	33.3	12
Large body size	75	62.5	74	60	66.7	68
Pedigree	25	20	26	28	0	20
Number of eggs per clutch, no.	10	18	14	15	14	14
Age at first laying, %						
16 weeks	60	16.6	5	0	25	21
20 weeks	0	27.7	26.3	64	25	29
24 weeks	20	27.7	42	18	50	31
28 weeks	20	27	26.7	18	0	19
Frequency of cleaning shelter, %						
Once per day	100	43.8	100	80	-	81
Every two days	0	37.4	0	20	-	14
Every 3 to 6 days	0	18.8	0	0	-	5
Stimulating broody hen, %						
Hanging their leg up down to fixed objects (21%)	0	43.8	47	15.4	0	21
Changing house	43	28.2	21	23	33.3	30
Providing additional feed	0	9.4	16	38.6	0	13
No interference	57	18.6	16	23	66.6	36
Broody length (if intervened), %						
One week	100	77.2	87	63.6	100	85
Two weeks	0	0	13	27.3	0	8
Three weeks	0	18.3	0	0	0	4
One month	0	4.5	0	9	0	3

Conclusion

- Village chickens have deep-rooted impact in the socio-cultural, economic profile and livelihood of the rural poor community. Therefore, there is a need to design and implement a research, extension and development agenda in order to improve their production and productivity in the rift valley of Oromia, Ethiopia.

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Go to top